

NEW BUTTERFLY TAXA FROM NEW IRELAND, PAPUA NEW GUINEA (LEPIDOPTERA: NYMPHALIDAE AND LYCAENIDAE)

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Abstract

Parantica fuscela berak subsp. nov., *Nacaduba zaron* sp. nov., *Philiris siassi krima* subsp. nov., *P. apicalis ginni* subsp. nov., *P. luscescens lak* subsp. nov. and *Udara drucei tennenti* subsp. nov. from New Ireland are described and illustrated. The life history of *P. siassi krima* is also described and figured, with *Litsea* sp. (Lauraceae) recorded as a larval food plant.

Introduction

A number of new butterfly taxa have been described recently from New Ireland, Papua New Guinea (Müller 1999a, 1999b, 2001; Müller and Sands 1999; Müller and Tennent 1999; Tennent 2000a, 2000b). The majority of these were taken in largely inaccessible montane rainforest in the interior of the island. This work describes further new taxa from New Ireland, including one new species and five distinctive new subspecies of little-known taxa recorded previously only from New Britain, Umboi Island or mainland New Guinea.

Depositories are abbreviated as follows: AMS - Australian Museum, Sydney; ANIC - Australian National Insect Collection, CSIRO, Canberra; BMNH - The Natural History Museum, London; CJMC - C. J. Müller Collection; SGC - Scott Ginn Collection.

Parantica fuscela berak subsp. nov.

(Figs 1-4)

Types. Holotype ♂, PAPUA NEW GUINEA: Hans Meyer Range, 1400 m, southern New Ireland, 24.viii.1998, C.J. Müller (BMNH). Paratypes: 1 ♂, same data as holotype (CJMC), 1 ♀, same data as holotype (BMNH), 1 ♀, Hans Meyer Range, 2400 m, southern New Ireland, 22.viii.1998, C.J. Müller (CJMC).

Description. Male (Figs 1-2). Forewing length 39 mm; antenna 18 mm. Head black with white dots around eye, both dorsally and ventrally; antenna and labial palpus black. Thorax black. Abdomen black dorsally and grey-cream ventrally. Forewing upperside deep chocolate brown with a bluish-white median cell spot, a number of irregular postmedian, subapical and subterminal spots of similar colouring between vein CuA₂ and costa; underside similar to upperside but with ground colour more red-brown close to termen and along costa. Hindwing with subtornal grey oval sex brand centered on vein 1A+2A, upperside light chocolate brown with irregular bluish-white median band and more distinct submarginal row of spots; underside similar to upperside but with ground colour red-brown, distinct white spot in radial sector and a row of white submarginal spots, black scaling around sex brand.

Female (Figs 3-4). Forewing length 42 mm, antenna 19 mm. Similar to male but larger, with wings more rounded, ground colour on both wing surfaces paler, submarginal and median forewing spots extended to near anal vein, underside with submarginal row of spots larger and more continuous.

Comments. Both sexes of *P. f. berak* may be separated from *P. f. fuscela* Parsons by the larger bluish-white spots on both wing surfaces and by the presence of a row of white subterminal spots on the hindwing underside. The underside ground colour in *P. f. berak* appears to be a much richer red-brown than that of *P. f. fuscela*, although the only known pair of the latter taxon are worn and this may not be a diagnostic character.

Parantica f. fuscela was described from a single pair, taken during the early 1960s by J. Sedlacek in eastern New Britain, at about 1000 m elevation (Parsons 1989). The discovery of this species in montane New Ireland is not surprising, considering the faunal similarities between the two islands. Adults of *P. f. berak* were taken flying in montane moss forest together with a number of recently described montane taxa, including *Graphim kosii* Müller & Tennent, *Cethosia vasilia* Müller, *Delias messalina lizzae* Müller, *Leuciacria olivei* Müller and *Mycalesis mulleri* Tennent.

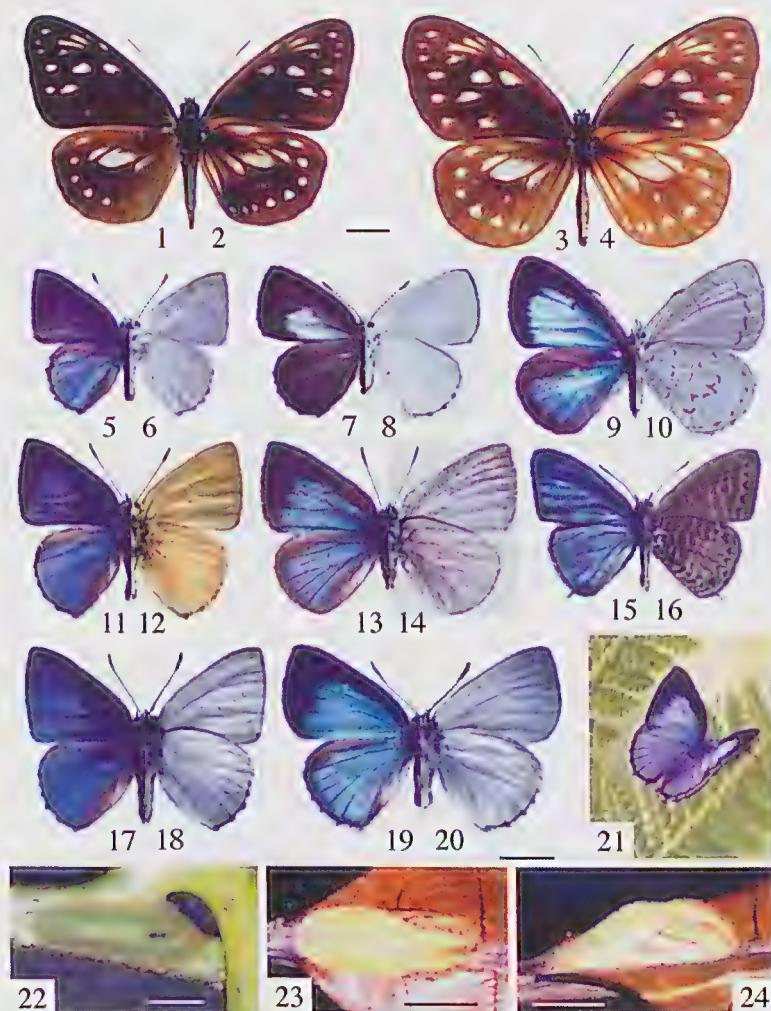
***Philiris siassi krima* subsp. nov.**

(Figs 13-14, 17-24)

Types. Holotype ♂, PAPUA NEW GUINEA: Cape Suesat, 50 m, northeastern New Ireland, 15.vii.1998, C.J. Müller (ANIC). Paratypes: 1 ♂, same data as holotype (CJMC), 1 ♂, same data as holotype but dated 17.vii.1998 (AMS), 4 ♂♂, ~12 km W of Taron Village, 550 m, southern New Ireland, 14.viii.1998, C.J. Müller (1 in BMNH, 3 in CJMC), 1 ♂, Weiten Valley, 350 m, southern New Ireland, 24.viii.1998, C.J. Müller (CJMC), 1 ♂, Schleinitz Mts, 900 m, central New Ireland, 8.x.2000, C.J. Müller (CJMC), 2 ♀♀, Schleinitz Mts, 1260 m, central New Ireland, 24.vii.1998, C. J. Müller (CJMC), 1 ♀, Schleinitz Mts, 1000 m, central New Ireland, bred ex-pupa, emerged 24.xi.2000, pupated 1.xi.2000, C.J. Müller (CJMC).

Description. Male (Figs 17-18). Forewing length 19 mm, antenna 10 mm. Head black with eye ringed white; antenna black, ringed white, with club tipped orange brown. Thorax black dorsally and grey ventrally. Abdomen black, white ventrally. Forewing with costa fairly straight; upperside purplish-blue with narrow (< 0.5 mm) black termen; underside lustrous white. Hindwing upperside as for forewing but with costa and inner margin broadly grey-brown; underside as for forewing but with narrow black border, increasing in width towards tornus.

Female (Figs 13-14, 19-20). Forewing length 20 mm, antenna 11 mm. Head, antenna, thorax and abdomen as for male. Forewing with termen strongly convex; upperside black-brown with iridescent sky blue area extending from base through cell along radius to postmedian area and to inner margin; underside as for male. Hindwing upperside sky blue with black-brown termen



Figs 1-24. New butterfly taxa from New Ireland. (1-20): Adults; odd numbers upperside, even numbers underside. (1, 2) *Parantica fuscela berak* male; (3, 4) *P. f. berak* female; (5, 6) *Philiris luscescens lak* male; (7, 8) *P. l. lak* female; (9, 10) *Udara drucei tennenti* female; (11, 12) *Philiris apicalis ginni* male; (13, 14) *P. siassi krima* female; (15, 16) *Nacaduba zaron* male; (17, 18) *Philiris siassi krima* male; (19, 20) *P. s. krima* female. (21): *P. s. krima* female, on foliage. (22-24): Early stages of *P. s. krima*. (22) Fifth instar larva, dorsal view; (23) Pupa, dorsal view; (24) Pupa, lateral view. Scale bar (Figs 1-4) = 9 mm; (Figs 5-20) = 8 mm; (Figs 22-24) = 6 mm.

border, also extending along veins, broadly grey-brown along costa and inner margin, cilia white; underside as for male.

Life history. Foodplant *Litsea* sp. (Lauraceae).

Egg. Diameter 0.8 mm, wider than high, white, strongly pitted with fine spines along pit peripheries.

Larva (Fig. 22). Third instar 14 mm long, flattened laterally, flanged and indented between segments, dense fine setae covering body, especially anteriorly, grass green with pair of irregular yellow dorsolateral stripes and light brown dorsal stripe along segments 1 and 2, also 8 and 9. Final instar (Fig. 22) 23 mm long, similar to third instar but with dark dorsal stripe blue-black and restricted to body segments 1 and 2.

Pupa (Figs 23-24). Length 16 mm, covered by short, coarse setae, flattened posteriorly, pale yellow-green with red-brown dorsal stripe on head and thorax and 3 equidistant stripes of similar colouring on wing cases, parallel to veins, and along termen. Attached by cremaster and central girdle.

Comments. *P. s. krima* males are very similar to those of *P. s. siassi* Sands but tend to have a straighter forewing termen, giving the wings a more pointed appearance. The male genitalia are very similar to those of *P. s. siassi* (see Sands 1979). Females have the blue area on the upperside much more extensive and paler than in *P. s. siassi*. Females are variable in wing shape (see Figs 13-14, 19-20).

Philiris s. siassi was described from specimens taken from Umboi (Siassi) Island in the Bismarck archipelago (Sands 1979). Specimens have also been observed on New Britain (D. Sands, pers. comm.). In New Ireland *P. s. krima* occurs from sea level to around 1300 m and possibly higher. Males defend territories from perches between 3 and 12 m above the ground, commonly adjacent to streams. At low altitude in southern New Ireland this species was taken flying with *Philiris melanacra* Tite, *P. tombara* Tite, *P. luscescens lak* and *P. intensa* (Butler).

Philiris luscescens lak subsp. nov.

(Figs 5-8, 26)

Types. Holotype ♂, PAPUA NEW GUINEA: ~6 km N of Cape Silur, 100-150 m, southern New Ireland, 3.viii.1998, C.J. Müller (ANIC). Paratypes: 1 ♂, 1 ♀, same data as holotype but dated 5.viii.1998, genitalia dissected and attached to specimen (CJMC), 1 ♂, 1 ♀, same data as holotype but dated 8.viii.1998 (CJMC), 1 ♂, same data as holotype but dated 9.viii.1998 (AMS), 1 ♂, same data as holotype but dated 10.viii.1998 (CJMC), 1 ♂, same data as holotype but dated 11.viii.1998 (CJMC).

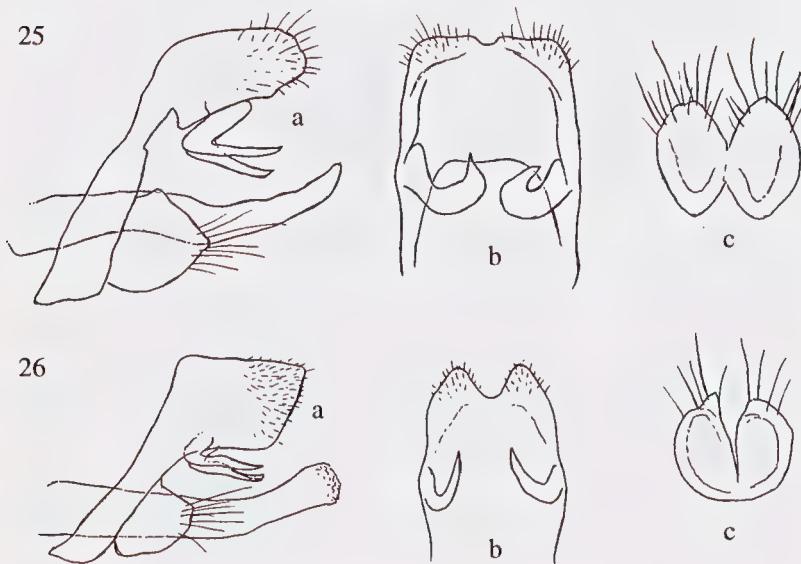
Description. Male (Figs 5-6). Forewing length 13 mm, antenna 8 mm. Head grey-black with eye ringed white, antenna black ringed white. Thorax and abdomen grey-brown, white beneath. Forewing with termen straight; upperside lavender blue with costa, apex and termen broadly dark brown;

underside creamy white. Hindwing upperside lavender blue with termen, costa and inner margin dark brown; underside creamy white with small black submedian spot between vein 1A+2A and anal vein, termen narrowly black.

Female (Figs 7-8). Forewing length 16 mm, antenna 9 mm. Head, antenna, thorax and abdomen as for male. Forewing upperside dark brown with pale bluish white basal area below cell, becoming darker blue near base and costa; underside as for male. Hindwing upperside dark brown with scattered blue scales in cell; underside as for male.

Male genitalia (Fig. 26). Sociuncus squared laterally, dorsally U-shaped anteriorly; brachium long, apically slender; valva squat, asymmetrical, roughly hemispherical, aedeagus elongate, rounded apically.

Etymology. Named after the Lak district, a local name referring to the bulge in southern New Ireland where the type series was collected.



Figs 25-26. Male genitalia of *Philiris* spp. from New Ireland. (25) *P. apicalis ginni*, (a) lateral view; (b) sociuncus, dorsal view; (c) valvae, ventral view. (26) *P. luscescens lak*, (a) lateral view; (b) sociuncus, dorsal view; (c) valvae, ventral view. Scale bar = 0.5 mm.

Comments. Parsons (1998) correctly assumed that specimens of *P. luscescens* Tite from New Ireland represent 'a distinct unnamed race'. Males of *P. l. lak* have much broader forewing apical margins and a lavender hue to the blue,

not developed in *P. l. luscescens*. Additionally, males of *P. l. lak* also have a very straight forewing termen. Parsons (1998) also commented on the distinctive genitalia of New Ireland specimens. Females of the two subspecies are very similar but those of *P. l. lak* may have more blue scales on the hindwing than the nominate subspecies.

P. l. lak was found to be extremely local in New Ireland, being recorded at only a single small locality. However, a female taken in the Schleinitz Mountains at 800 m, likely belongs to *P. l. lak*.

***Philiris apicalis ginni* subsp. nov.**

(Figs 11-12, 25)

Types. Holotype ♂, PAPUA NEW GUINEA: ~12 km W of Taron Village, 550 m, southern New Ireland, 13.viii.1998, C.J. Müller (in ANIC). Paratypes: 2 ♂♂, same data as holotype, both with genitalia dissected and attached to specimen (1 in CJMC, 1 in SGC), 2 ♂♂, Weiten Valley, 250 m, southern New Ireland, 24.viii.1998, C.J. Müller (CJMC).

Description. Male (Figs 11-12). Forewing length 16 mm, antenna 9 mm. Head black with eye ringed white; antenna black ringed white. Thorax and abdomen black, grey beneath. Forewing upperside purple with black apical area tapering towards inner margin; underside grey. Hindwing upperside purplish-blue with termen narrowly black, costa and inner margin broadly grey-brown; underside grey, black along tornal veins at termen.

Male genitalia. (Fig. 25). Sociuncus pointed laterally, dorsally squared with tiny saddle anteriorly; brachium long and thick; valva squat and rounded, aedeagus elongate, irregular apically.

Etymology. Named after Mr Scott Ginn of Cherrybrook, New South Wales.

Comments. Males of *P. a. ginni* have much more extensive purple on the forewing upperside and the colour above of the fore and hindwings are more contrasting than those of *P. a. apicalis* Tite. The grey underside is distinctive amongst species of *Philiris* Röber from New Ireland.

P. a. ginni was found to be extremely local in New Ireland, being recorded at only two small localities. Males were collected at flowers together with *Hypochrysops arronica honora* Grose-Smith.

***Udara drucei tennenti* subsp. nov.**

(Figs 9-10)

Types. Holotype ♀, PAPUA NEW GUINEA: Hans Meyer Range, 1700 m, southern New Ireland, 19.viii.1998, C.J. Müller (ANIC). Paratypes: 2 ♀♀, Hans Meyer Range, 2400 m, southern New Ireland, 22.viii.1998, C.J. Müller (1 in CJMC, 1 in BMNH).

Description. Female (Figs 9-10). Forewing length 20 mm, antenna 9 mm. Head grey, eye ringed white, antenna black, ringed white. Thorax and abdomen dark grey, grey-white beneath. Forewing termen fairly convex;

upperside dark brown with lustrous sky blue area extending from base through cell below radius to postmedian area and to inner margin, dark brown along discocellulars; underside grey-white, a submarginal and a postmedian band of brown spots, latter broken at vein M_1 , also brown cell stripe parallel to discocellulars. Hindwing upperside dark brown with central lustrous sky blue area between vein M_2 , inner margin and subterminal area; underside grey-white with a row of brown subterminal spots, also an irregular, broken median and basal band of brown spots, brown along discocellulars.

Male unknown.

Etymology. Named after Mr John Tennent, The Natural History Museum, London.

Comments. Females of *U. d. tennenti* are much larger than those of *U. d. drucei* (Bethune-Baker). The blue area on the upperside of the forewing is more extensive and more iridescent than in *U. d. drucei* but more reduced on the hindwing, while the markings on the underside of *U. d. tennenti* are much less distinct and brown rather than black.

U. d. tennenti was taken at high altitude in New Ireland, where females flew over the canopy on mountain tops, rarely settling for brief periods on both the branches and foliage of lauraceous trees. When males become available, it is possible that this subspecies will be found to be specifically distinct from *U. d. drucei* from mainland New Guinea.

***Nacaduba zaron* sp. nov.**

(Figs 15-16)

Type. Holotype ♂, PAPUA NEW GUINEA: Schleinitz Mts, 1000 m, central New Ireland, 1.x.2000, C.J. Müller (ANIC).

Description. Male (Figs 15-16). Forewing length 16 mm, antenna 9 mm. Head black, eye ringed white; antenna black, ringed white. Thorax and abdomen black with fine hairs bluish-grey dorsally and brown beneath. Forewing with costa much longer than inner margin, termen straight; upperside iridescent purplish-blue, termen and cilia narrowly black; underside dark brown, a row of broad submarginal spots forming arrow shapes towards base, each outlined in white, a postmedian band of spots, displaced basally at vein CuA_1 , a median and basal band in cell, both outlined in white, basal band continuing indistinctly to near inner margin. Hindwing with short black, white-tipped tail at vein CuA_2 ; upperside iridescent purplish-blue, costa, termen and cilia narrowly black; underside dark brown with large black subtornal spot between veins CuA_2 and CuA_1 , finely outlined in metallic light blue, but replaced by orange near termen, a row of broad submarginal spots forming arrow shapes towards base, outlined in white, a postmedian, median and basal band all outlined in white and displaced at veins.

Comments. *N. zaron* is unlike any other known species of *Nacaduba* Moore and is characterised by its short hindwing tails, straight and rather short forewing termen, iridescent purplish-blue upperside and dark brown underside ground colour.

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